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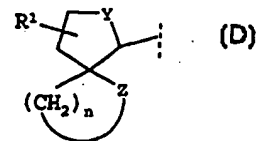
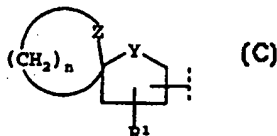
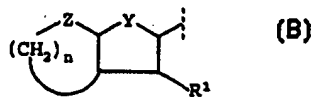
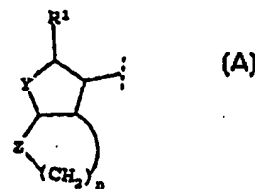
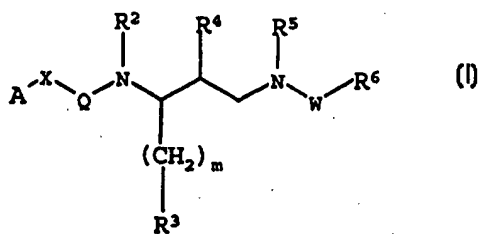
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(54) Title: FITNESS ASSAY AND ASSOCIATED METHODS



(57) Abstract

The present invention provides an assay for determining the biochemical fitness of a biochemical species in a mutant replicating biological entity relative to its predecessor. The present invention further provides a continuous fluorogenic assay for measuring the anti-HIV protease activity of protease inhibitor. The present invention also provides a method of administering a therapeutic compound that reduces the chances of the emergence of drug resistance in therapy. The present invention also provides a compound of formula (I) or a pharmaceutically acceptable salt, a prodrug, a composition, or an ester thereof, wherein A is a group of formulas (A), (B), (C) or (D); R¹, R², R³, R⁵ or R⁶ is H, or an optionally substituted and/or heteroatom-bearing alkyl, alkenyl, alkynyl, or cyclic group; Y and/or Z are CH₂, O, S, SO, SO₂, amino, amides, carbamates, ureas, or thiocarbonyl derivatives thereof, optionally substituted with an alkyl, alkenyl, or alkynyl group; n is from 1 to 5; X is a bond, an optionally substituted methylene or ethylene, an amino, O or S; Q is C(O), C(S), or SO₂; m is from 0 to 6; R⁴ is OH, =O (keto), NH₂, or alkylamino, including esters, amides, and salts thereof; and W is C(O), C(S), S(O), or SO₂. Optionally, R⁵ and R⁶, together with the N-W bond of formula (I), comprise a macrocyclic ring.